

Amendments to the Drawing Figures:

The attached drawing sheet includes proposed changes to FIG. 5 and replaces the original sheet including FIGs. 2 and 5.

Attachment: Replacement Sheet

REMARKS/DISCUSSION OF ISSUES

By this Amendment, Applicants revise FIG. 5, amend claims 1-3 and 5-13, and add new claims 14-15. Accordingly, claims 1-15 are pending in the application.

OBJECTION TO THE DRAWINGS

The Office Action objects to FIG. 5 for including unlabeled boxes.

Applicants attach hereto a revised FIG. 5 wherein the boxes are labels in accordance with the description in the specification.

Accordingly, Applicants respectfully request that the objections to the drawings be withdrawn.

OBJECTIONS TO THE CLAIMS

The Office Action objects to claims 7-10 as being multiple dependent claims that depend from one or more other multiple dependent claims. By this Amendment, Applicants amend claims 5 and 8-10 so that no multiple dependent claims depend from any other multiple dependent claims.

Accordingly, Applicants respectfully request that the objections to the claims be withdrawn.

35 U.S.C. § 101

The Office Action rejects claim 13 under 35 U.S.C. § 101. By this amendment, Applicants amend claim 13 and respectfully submit that the rejection under 35 U.S.C. § 101 is no longer applicable.

Accordingly, Applicants respectfully request that the rejection of claim 1 be withdrawn.

35 U.S.C. § 103

The Office Action rejects claims 1-6 and 11-13 under 35 U.S.C. § 103 over Maurincomme et al. U.S. Patent 6,879,711 in view of Metaxas U.S. Patent 6,295,464 and further in view of Ryals et al. U.S. Patent 5,803,914.

Applicants respectfully traverse these rejections for at least the following reasons.

Claim 1

Among other things, the system of claim 1 includes processing the image data of a 3D object wall to determine the amplitude of displacement of a plurality of regions of interest as a function of time.

The Office Action fairly admits that Maurincomme does not disclose this feature. Instead, the Office Action states that: (1) Metaxas discloses this feature at col. 12, lines 45-63; and (2) that it would have been obvious to modify Maurincomme to include such a feature *"for characterization of heart wall motion on a regional level to understand cardiac mechanics and the processes underlying a disease."*

Applicants respectfully disagree.

At the outset, the cited text in Metaxas does not disclose processing any image data of a 3D object wall. Indeed, the cited text makes no mention of any object wall. Furthermore, the cited text does not disclose determining the amplitude of displacement of a plurality of regions of interest as a function of time. The text merely discloses that a length of a left ventricle can change from 8 cm to 10 cm from a first time to a second time. Furthermore, FIGs. 9a-9c do not even show any image data of a 3D object wall – or any image data at all. They are plots produced from a model of left ventricular behavior.

So no combination of the cited references could produce the system of claim 1.

Furthermore, Applicants respectfully submit that the supposed reason for modifying Maurincomme to determine the amplitude of displacement of a plurality of regions of interest as a function of time does not make any sense. The entire purpose of Maurincomme is to precisely register a 3D X-ray image with a 3D nuclear magnetic resonance (NMR) image of a same object (e.g., a human heart) so that the overlaid images can be displayed to a user (e.g., a physician) for better visualization. Meanwhile, as noted above, Metaxas is directed to developing a model of the left ventricle of the heart – and it is Metaxas' model that supposedly would provide

"characterization of heart wall motion on a regional level to understand cardiac mechanics and the processes underlying a disease." So in order to modify Maurincomme to provide this benefit, one would have to replace Maurincomme's overlaid X-Ray and NMR images with Metaxas' model. This, of course would destroy the entire point of Maurincomme's invention. Even if this made any sense, such a modification would be improper. See M.P.E.P. §§ 2141.03(V) & 2141.03 (VI).

Accordingly, for at least these reasons, Applicants respectfully submit that claim 1 patentable over the cited art.

Claims 2-10

Claims 2-10 all depend from claim 1 and are deemed patentable for at least the reasons set forth above with respect to claim 1, and for the following additional reasons.

Claim 2

Among other things, the system of claim 2 provides indications of the maximal or minimal amplitudes of displacements of the regions of interest over a period of time.

The Office Action states that Metaxas discloses this feature at col. 12, lines 45-63.

Applicants respectfully disagree. The cited text does not make any mention of any maximal or minimal amplitudes of displacements. The cited text does not mention any plurality of regions of interest.

Accordingly, for at least these additional reasons, Applicants respectfully submit that claim 2 patentable over the cited art.

Claim 3

A rejection under 35 U.S.C. § 103 requires that the references must disclose or suggest each and every feature of the claimed invention.

Among other things, the system of claim 3 displays indications of the instants of time at which the maximum or minimum of amplitudes of displacements occur in the regions of interest, over the period of time, in the 2D simplified phase representation.

The Office Action does not even bother to mention this feature.

Applicants respectfully submit that since the references do not disclose or suggest a system including this feature, the rejection of claim 3 under 35 U.S.C. § 103 is improper.

Accordingly, for at least these additional reasons, Applicants respectfully submit that claim 3 is patentable over the cited art.

Claim 4

Applicants respectfully submit that, contrary to the Office Action, FIG. 13 of Ryals does not show a display of the 2D simplified amplitude representation and the 2D simplified phase representation together in a same image, and col. 38, lines 27-48 certainly does not disclose any such display.

Accordingly, for at least these additional reasons, Applicants respectfully submit that claim 4 is patentable over the cited art.

Claim 5

Applicants respectfully submit that, contrary to the Office Action, FIG. 13 of Ryals does not show a display of the 2D simplified amplitude representation and the 2D simplified phase representation together in a same image, and col. 38, lines 27-48 certainly does not disclose any such display.

Accordingly, for at least these additional reasons, Applicants respectfully submit that claim 4 is patentable over the cited art.

Claim 11

Among other things, the method of claim 11 includes processing the image data of a 3D object wall to determine the amplitude of displacement of a plurality of regions of interest as a function of time.

As explained above with respect to claim 1, no combination of the cited art would produce a method that includes such a feature.

Accordingly, for at least these reasons, Applicants respectfully submit that claim 11 patentable over the cited art.

Claims 12-13

Claims 12-13 depend from claim 11 and are deemed patentable for at least

the reasons set forth above with respect to claim 11. Claim 12 is also deemed patentable for similar reasons to those set forth above with respect to claim 3.

NEW CLAIMS 14-15


Claims 14-15 depend from claim 11 and are deemed patentable for at least the reasons set forth above with respect to claim 11, and for similar reasons to those set forth above with respect to claims 2 and 5, respectively.

CONCLUSION

In view of the foregoing explanations, Applicants respectfully request that the Examiner reconsider and reexamine the present application, allow claims 1-15 and pass the application to issue. In the event that there are any outstanding matters remaining in the present application, the Examiner is invited to contact Kenneth D. Springer (Reg. No. 39,843) at (571) 283.0720 to discuss these matters.

Respectfully submitted,

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